

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



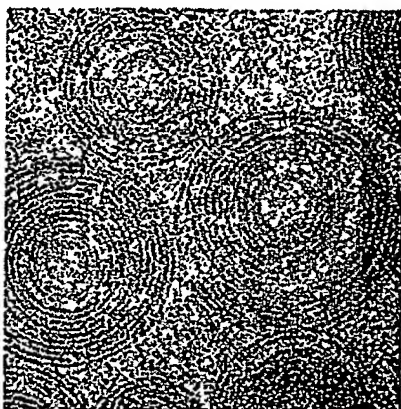
(43) International Publication Date  
9 February 2006 (09.02.2006)

PCT

(10) International Publication Number  
**WO 2006/014035 A1**

- (51) **International Patent Classification<sup>7</sup>:** A61K 9/127, A61P 17/16
- (21) **International Application Number:** PCT/KR2004/001989
- (22) **International Filing Date:** 6 August 2004 (06.08.2004)
- (25) **Filing Language:** Korean
- (26) **Publication Language:** English
- (71) **Applicant (for all designated States except US):** BIOSPECTRUM, INC. [KR/KR]; Doosan Bldg., 39-3 Sungbok-Dong, Yongin City, Kyunggi-Do 449-840 (KR).
- (72) **Inventors; and**
- (75) **Inventors/Applicants (for US only):** PARK, Deok-Hoon [KR/KR]; #105-303, Samsung First APT, Pungdeokchun 1-Dong, Kyunggi-Do 449-762 (KR). LEE, Jong-Sung [KR/KR]; #115-2705, Samsungraemian APT, 90-1, Anyang 1-Dong, Manan-Gu, Anyang City, Kyunggi-Do 430-710 (KR). JUNG, Kwang-Sun [KR/KR]; 249, Yonggang-Ri, Wolgok-Myon, Kimpo City, Kyunggi-Do 415-873 (KR).
- (74) **Agent:** SON, Min; 19th Floor, City Air Tower, 159-9 Samsung-dong, Kangnam-gu, Seoul 135-973 (KR).
- (81) **Designated States (unless otherwise indicated, for every kind of national protection available):** AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
- (84) **Designated States (unless otherwise indicated, for every kind of regional protection available):** ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:**  
— with international search report
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) **Title:** MULTIPLE LAYERED LIPOSOME AND PREPARATION METHOD THEREOF



(57) **Abstract:** Disclosed are multilayered liposomes for transdermal absorption and a method of preparing the liposomes. The multilayered liposomes are prepared using a mixture of oil-phase components comprising squalane, sterols, ceramides, neutral lipids or oils, fatty acids and lecithins, is 200 to 5000 nm in particle size, and is capable of entrapping a physiologically active substance. The multilayered liposomes entrap a larger amount of a physiologically active substance and are structurally stable when encapsulating the physiologically active substance, compared to unilamellar liposomes. Also, they are prepared by a simple and cost-effective process not using a high-pressure homogenizer but using a general homomixer. Further, since the multilayered liposomes are prepared in a larger size than the intercellular spaces in the stratum corneum, they overcome the tension of surrounding cells when passing through the intercellular spaces and are thus able to penetrate into the dermal layer, compared to nano-sized unilamellar liposomes. Thus, the multilayered liposomes are useful for enhancing the transdermal absorption of physiologically active substances.

WO 2006/014035 A1

BEST AVAILABLE COPY